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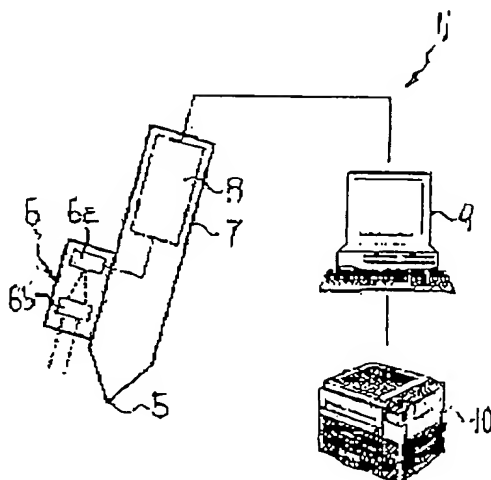
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(54) COORDINATE INPUT DEVICE, INFORMATION PROCESSING SYSTEM AND MEDIUM

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain technique capable of associating corrected and written information with information before correction of a medium in real time without using a tablet and also to precisely detect coordinates on the medium.

SOLUTION: A pen type coordinates input device 4 detects a position where a point part 5 is located on a medium. That is, an image reader 6 optically reads a code symbol which is formed on the medium and shows coordinates on the medium. A microcomputer 8 decodes the read code symbol. A detecting means (8) detects the position, direction and distortion quantity of a code symbol in an image read by the reader 6. The coordinates at the position of the part 5 on the medium are detected according to information after decoding by the microcomputer 8 and the position, direction and distortion quantity of the code symbol detected by the detecting means (8).



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CORRECTION OR AMENDMENT

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[Method of Amendment] Modification
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[Claim(s)]
[Claim 1]

It is the paper in which the image showing predetermined information was printed,
Said image is paper characterized by expressing the paper specific information and the coordinate information in the paper for specifying paper.

[Claim 2]

It is the paper in which the image showing predetermined information was printed,
Said image is paper characterized by being related with the paper specific information and the coordinate information in the paper for specifying paper before printing to paper.

[Claim 3]

Said image is printed with the ingredient which can be read with an optical reader,
It is printed by the range to which writing actuation is performed on paper at least by the pen mold equipment which has an optical reader,

Paper according to claim 1 or 2 characterized by things.

[Claim 4]

From the image which the optical reader formed in pen mold equipment read in paper according to claim 1, 2, or 3, the paper specific information for specifying said paper and the writing locus information written in said paper are searched for,

The data-processing approach characterized by things.

[Claim 5]

The process which collates the electronic data corresponding to the paper from said paper specific information,
The process which adds said writing locus information to the collated electronic data,

The data-processing approach characterized by preparation ****.

[Claim 6]

An optical reader reads said location specific information continuously, while pen mold equipment writes down in in the paper [according to claim 3] location specific information was printed.

Pen mold equipment characterized by things.

[Procedure amendment 2]

[Item(s) to be Amended] 0018
[Method of Amendment] Modification
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[0018]

[Means for Solving the Problem]

Invention according to claim 1 is the paper in which the image showing predetermined information was printed, and said image is characterized by expressing the paper specific information and the coordinate information in the paper for specifying paper.

Invention according to claim 2 is the paper in which the image showing predetermined information was printed, and said image is characterized by being related with the paper specific information and the coordinate information in the paper for specifying paper, before printing to paper.

In paper according to claim 1 or 2, said image is printed with the ingredient which can be read with an optical reader, and invention according to claim 3 is characterized by what is printed by the range to which writing actuation is performed on paper at least by the pen mold equipment which has an optical reader.

Invention of the data-processing approach according to claim 4 is characterized by what the paper specific information for specifying said paper and the writing locus information written in said paper are searched for from the image which the optical reader formed in pen mold equipment read in paper according to claim 1, 2, or 3.

Invention of the data-processing approach according to claim 5 is characterized by having the process which collates the electronic data corresponding to the paper from said paper specific information, and the process which adds said writing locus information to the collated electronic data.

An optical reader is characterized by what said location specific information is continuously read for, while invention of pen mold equipment according to claim 6 writes down in the paper [according to claim 3] location specific information was printed for pen mold equipment.

[Procedure amendment 3]
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[Method of Amendment] Deletion
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[Procedure amendment 4]
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[Procedure amendment 40]
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[Translation done.]

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to a coordinate input unit, the information processing system equipped with that coordinate input unit, and a medium.

[0002]

[Description of the Prior Art] Since the electronized document is displayed on a display, a problem is in the ease of carrying out of perusal. Moreover, there is a problem also in portability in displaying on a display. Then, a document is printed, and the printed matter is perused. or the printed matter is carried and used in many cases. On the other hand, although such printed matter is sometimes corrected plentifully, an electronic former document and a retouch matter are not linked at all, but it is necessary to reedit a former document electronically later, then, the system which will be automatically reflected in an electronic former document if the printed document is corrected — I want realizing the tablet system of the paper base, speaking directly, it is necessary to acquire the coordinate of the

[0003] On the other hand, two or more information-display media to which the whole displays various information free [rewriting], and maintains it according to the shape of paper in JP,9-101864,A, two or more information-storage media, and one information recording device form, the information by which the handwriting input was carried out at the information recording device is used for the display of an information-display medium, or storage of an information-storage medium, and the technique in which of the information read from the information-storage medium by the information recording device is also displayed on an information-display medium is indicated. An information-display medium maintains the displayed information and the elimination and correction are also free for it. Therefore, creation and are recording of a document can be realized, without consuming paper.

[0004] In JP,61-296421,A, the code symbol which can be read is optically arranged in in the shape of a matrix on a coordinate plate, and the technique which acquires coordinate information is indicated by reading it. The same technical contents are indicated by JP,7-141104,A.

[0005] On the other hand, in case file information (file name etc.) is printed by the bar code in space and it corrects on a tablet, the bar code on space is read, and the technique of editing a document is indicated by JP,7-244657,A.

[0006]

[Problem(s) to be Solved by the Invention] In said JP,9-101864,A, the technique which combined both advantage is proposed in consideration of the merits and demerits of a means to record on the paper traditional as a means display and a means to record on the computer with the handwriting input. However, the information by which the handwriting input was carried out can rewrite repeatedly (that is, it does not consume like paper), and MEMORIHE are recording is carried out, or the information is outputted to the exterior, is inputted from the outside, or is disclosed about the equipment whose processing is possible as digital information which can be processed by the computer.

[0007] However, in view of the viewpoint of usability, information is written in, or the information-display medium of two or more sheets currently printed is put on a tablet, and by what carries out a retouch input on the document. even when walking around with an information-display medium, it is necessary to carry a tablet at any time, and already becomes inconvenient.

[0008] Moreover, implementation of convenience equivalent to an individual's personal case where use and it writes to traditional paper with a writing implement as a direction, and functionality is needed. However, the writing activity using a tablet serves as a different feel from the case where it writes to paper with a writing implement, and has sense of incongruity for a user.

[0009] Such faults are the same also about the technique of the indication to said JP,61-296421,A and JP,7-141104,A.

[0010] Although the bar code on space is read and a document is edited in case JP,7-244657,A is corrected on a tablet with the technique of an indication, after reading the bar code on space one by one in the case of edit, it is necessary to carry out, and there is fault of being troublesome.

[0011] the purpose of this invention be in a situation which do activity or work in an office work piece using the medium of two or more sheets by which data , such as a meeting , a document check , and a creative activity , be print , and be offer the technique which can relate with real time the information which carried out retouch entry to the information before retouch on a medium , without use a tablet like before .

[0012] Another purpose of this invention is enabling it to detect the coordinate on a medium delicately.

[0013] Another purpose of this invention is offering the technique which can relate with real time the information which specified the information before retouch on a medium easily, and carried out retouch entry to the information before the retouch concerned.

[0014] Another purpose of this invention is offering the technique which can relate with real time the information which specified the information before retouch on a medium and carried out retouch entry to the information before the retouch concerned.

[0015] Another purpose of this invention is enabling it to record the writing locus according to color.

[0016] Another purpose of this invention is enabling it to save a paper resource.

[0017] Another purpose of this invention is making a medium legible.

[0018]

[Means for Solving the Problem] The body of equipment which people can have invention according to claim 1 in a hand, and can perform writing actuation, The image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, Calculation means, such as the amount of distortion which computes at least one of the location of said code symbol in a decoding means to decode this read code symbol, and the image which said image reader read, the sense, and the amounts of distortion, Among the document information which is the information which shows the exception of the coordinate information which shows the coordinate on said medium contained in the information after said decoding, and said medium, at least The former, It is the coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium, based on at least one of the location of said code symbol, the sense, and the amounts of distortion.

[0019] Therefore, since the coordinate of the locus notes of was taken on the medium is detectable, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since the location of the predetermined point on a medium is detected using at least one of the location of a code symbol, the sense, and the amounts of distortion in addition to the information which decoded the code symbol which shows the coordinate on a medium, the coordinate on a medium is delicately detectable.

[0020] The body of equipment which people can have invention according to claim 2 in a hand, and can perform writing actuation, The image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, A decoding means to decode this read code symbol, A symbol graphic form calculation means to compute the coordinate on said medium of two or more symbol graphic forms whose code symbols concerned arranged around said code symbol on said medium which exists in the image read with said image reader are another kind, and said image, It is the coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium, based on the coordinate information which shows the coordinate of the symbol graphic form computed with this symbol graphic form calculation means, and the coordinate on said medium contained in the information after said decoding.

[0021] Therefore, since the coordinate of the locus notes of was taken on the medium is detectable, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since the coordinate of two or more symbol graphic forms whose code symbols concerned arranged around a code symbol are another kind is also used in addition to the information which decoded the code symbol which shows the coordinate on a medium and the location of the predetermined point on a medium is detected, the coordinate on a medium is delicately detectable.

[0022] The body of equipment which people can have invention according to claim 3 in a hand, and can perform writing actuation, The image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, A code symbol detection means to detect the coordinate in the image concerned of two or more of said code symbols contained in a decoding means to decode this read code symbol, and the image read with said image reader, It is based on the coordinate information which shows the coordinate on said medium contained in the information after said decoding about the coordinate in the image of two or more of these code symbols, and two or more code symbols concerned. It is a coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium.

[0023] Therefore, since the coordinate of the locus notes of was taken on the medium is detectable, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since not only the information that decoded only one code symbol which shows the coordinate on a medium but the coordinate in the information which decoded two or more code symbols, and the image of two or more of the code symbols is used and the location of the predetermined point on a medium is detected, the coordinate on a medium is delicately detectable.

[0024] Invention according to claim 4 is equipped with a data-processing means to associate and process the color information which is the information about the color of the contents which corrected with the writing implement and this writing implement for being prepared in the point of said body of equipment, and correcting on said medium, and said coordinate information, in the coordinate input unit given in one 1 of claims 1-3.

[0025] Therefore, the writing locus according to color is recordable.

[0026] Invention according to claim 5 is equipped with the 1st storage means which memorizes the predetermined data currently beforehand printed on said medium in the coordinate input device given in one 1 of claims 1-4, and an addition means to add said coordinate information acquired about said specific medium, and said color information to

the predetermined data memorized by said 1st storage means.

[0027] Therefore, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet.

[0028] In a coordinate input device given in one 1 of claims 1-4, when printing predetermined data on said medium by the printer and this printer, invention according to claim 6 It has a correlation processing means to associate and process said document information acquired from said medium, and the identification information which is the information which identifies said predetermined data, the 1st storage means which memorizes said predetermined data, and the 2nd storage means which memorizes said information by which correlation processing was carried out.

[0029] Therefore, the information before retouch on a medium is specified easily, and it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before the retouch concerned] using a tablet.

[0030] In a coordinate input unit according to claim 6, when said document information, said coordinate information, and said color information are acquired about said specific medium, invention according to claim 7 Said predetermined data memorized by said 2nd storage means by collating the acquired document information and the information memorized by said 2nd storage means were specified, and it has an addition means to add the coordinate information and color information that said acquisition was made by said the specified predetermined data.

[0031] Therefore, the information before retouch on a medium is specified and it becomes possible automatically to relate with real time the information which carried out retouch entry to the information before the retouch concerned, without using a tablet.

[0032] Invention according to claim 8 is equipped with a coordinate input device given in one 1 of claims 1-7, and the medium by which the code symbol was formed on the front face, and said code symbol is information processing system which encodes the former at least among the document information which shows the exception of the coordinate information which shows the coordinate on said medium, and said medium.

[0033] Therefore, the same operation as invention of a publication can be done so to one 1 of claims 1-7.

[0034] Having the medium by which two or more symbol graphic forms whose code symbols concerned by which invention according to claim 9 has been arranged around a code symbol and the code symbol concerned a coordinate input device according to claim 2 and on the front face are another kind were formed, said code symbol is information processing system which encodes the former at least among the document information which shows the exception of the coordinate information which shows the coordinate on said medium, and said medium.

[0035] Therefore, the same operation as invention according to claim 2 can be done so.

[0036] Invention according to claim 10 is equipped with a coordinate input device given in one 1 of claims 1-7, and the medium by which the code symbol was formed on the front face, and said code symbol is information processing system which encodes the former at least among the document information which shows the exception of the coordinate information which is the logical positional information of the document on said medium, and said medium.

[0037] Therefore, the logical positional information of a document is detected and it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet.

[0038] Invention according to claim 11 forms the code symbol layer in which said medium formed said code symbol on the base material, and the recording layer notes of can be taken possible [rewriting] in information processing system given in one 1 of claims 8-10.

[0039] Therefore, since notes of a medium can be taken possible [rewriting], a paper resource can be saved.

[0040] In information processing system given in one 1 of claims 8-11, said code symbol of invention according to claim 12 is invisible.

[0041] Therefore, since a code symbol is invisible, a medium becomes legible.

[0042] Two or more symbol graphic forms whose code symbols concerned of invention according to claim 13 arranged around a code symbol and the code symbol concerned on the front face are another kind are formed, and said code symbol is a medium which encodes the former at least among the document information which shows the exception of the coordinate information which shows the coordinate on said medium, and said medium.

[0043] Therefore, the same operation as invention according to claim 2 is done so using a coordinate input unit according to claim 2 etc.

[0044]

[Embodiment of the Invention] [the gestalt 1 of implementation of invention] — the information processing system which is the gestalt of 1 implementation of this invention is explained as a gestalt 1 of implementation of invention.

[0045] Drawing. 1 is the top view of the medium 1 used with this information processing system. The document is visually recorded in the condition which can be read, generally human being is constituted from paper, cloth, plastics, etc. by the medium 1, and it is a sheet-like. A sign 2 is the document itself which human being can read, and are an alphabetic character, drawing, a table, etc. A sign 3 is the code symbol 3 which can be read optically, and although it is mentioned later in detail, generally they are a bar code, a two dimensional code, etc.

[0046] When human being prints a document 2 optically in it visually in the wavelength region which can be read although he cannot be read for human being in the code symbol 3 in the wavelength region which can be read as the extinction wavelength or luminescence wavelength of a document 2 and the ink of the code symbol 3 was not lapped mutually, a document 2 and the code symbol 3 can be printed in piles, and it can read independently. As invisible ink, there is stealth ink by *** Maxell and the sheet for thermal transfer printers is also prepared for human being at

...for example, this does not look almost to human being, but can be read optically in an infrared region. On the other hand, conversely, since transparent black ink is also marketed, if a commercial hot printing method printer is used using these ink, it will become possible easily to print the document 2 visible for human being and the invisible code symbol 3 by the printer in an infrared region (about an invisible ink ingredient, a detail is mentioned later).

[0047] In the example of drawing 1, the code symbol 3 is arranged in the shape of a matrix. The mark which means the coordinate of the code symbol 3 in the field where the code symbol 3 of a medium 1 is printed is encoded by the code symbol 3. For example, as for code symbol 3a at the upper left of drawing 1, "0101" is encoded, and "0102" code symbol 3c is encoded for code symbol 3b with "0201" "0103" code symbol 3d. Or the part whose part of "ab" code symbol 3c the part of "aa" code symbol 3b is "ac" and code symbol 3d as other examples for the part of code symbol 3a may be encoded with "ba." Thus, if two or more code symbols 3 can identify uniquely respectively, it will be desirable to arrange the code symbol 3 regularly [encode regularly and] like drawing 1 anything, although it is good and there is especially no constraint also in arrangement.

[0048] If an example is given more concretely, the upper left of space will be made into a zero and a x axis and the y-axis will be taken to the right and down. Here, it arranges so that the core of the code symbol 3 of "0101" may come to the location of (10mm, 10mm) of a x axis and the y-axis, and in the location of (10mm, 20mm), the code symbol 3 of "0201" is arranged in the code symbol 3 of "0102", and the location of (20mm, 10mm).

[0049] Moreover, optically, as a code symbol 3 which can be read, although the example of the QR code is shown, some which are otherwise common knowledge partly as same code symbol 3 are shown in drawing 1, for example, CodeOne, AztecCode, MaxiCode, etc. can be used for it. Moreover, a 1-dimensional bar code and an original code may be used.

[0050] The information encoded as a code symbol 3 is furthermore, as it is shown in "01020506" which means the thing of the 6th character which does not mean the physical location on a medium 1 and means the logical location of a document, for example, the 5th step failure in an examination of the Chapter 1 second article.

[0051] Although it is desirable to record on as large the range of a medium 1 as possible as for the code symbol 3, it is not necessary to necessarily record on the whole surface. For example, when printing by the printer, the perimeter of space is nonprintable range in many cases. When such, it is not necessary to necessarily print into such a part.

[0052] Although only the coordinate information which shows the location on the front face of a medium 1 is encoded by the code symbol 3 in the example of drawing 1, it is desirable to also encode and record the document information which is the information for identifying a document 2 uniquely. As document information which identifies a document uniquely, there are the information on a file name, the information with which the drive name, the directory name, and the file name were doubled, URL etc., for example. Which range the information on is encoded should just set according to the purpose of use. Although the code symbol 3 which encoded this document information may be arranged to a medium 1 independently [the code symbol 3 showing coordinate information], it can also be encoded as the code symbol 3 showing coordinate information at coincidence.

[0053] For example, document information and coordinate information may be encoded as one code symbol 3 that it seems that "c:\MyFile\Patent.doc0101" should be encoded for code symbol 3a, and "c:\MyFile\Patent.doc0102" should be encoded for code symbol 3b. For example, since amount of information of this amount becomes the size like several mm angle in QR CODE, even if it combines both, it can encode enough.

[0054] Drawing 2 is the block diagram showing the outline configuration of the coordinate input device 4 used with this information processing system. As shown in drawing 2, this coordinate input unit 4 is equipped with the writing implement-like body 7 of equipment with which people can have in a hand and can perform writing actuation. If required for the point 5 of this body 7 of equipment, the point parts of a writing implement i.e., a ball-point, and a mechanical pencil etc. are attached in it, and it is good for it also as a note being actually possible. The image reader 6 formed in the flank of the body 7 of equipment etc. is equipment which consists of optoelectric-transducer 6a, such as CCD, and optical-system 6b which consists of a lens etc., and reads the image on a medium 1. In addition, lighting can be formed in the image reader 6 if needed.

[0055] The microcomputer 8 is carried in the body 7 of equipment, and the image reader 6 is connected to this microcomputer 8. The various processings based on the image on the medium 1 read with the image reader 6 are made with a microcomputer 8. That is, the read code symbol 3 is decoded and the location of the code symbol 3 on the read image, the sense, and the amount of distortion are detected (it mentions later for details). This has realized calculation means, such as a decoding means and the amount of distortion. Moreover, the information processors 9, such as PC of the exterior of the body 7 of equipment, and connection are possible for a microcomputer 8, and an output is possible for it to an information processor 9 in the data stored into the microcomputer 8. In addition, it replaces with carrying a microcomputer 8 in the body 7 of equipment, the image reader 6 is connected with an information processor 9, and it may be made to perform said processing performed with a microcomputer 8 with an information processor 9. In addition, in drawing 2, the interface of a power source, and the microcomputer 8 and the body 7 of equipment. That is, the technique in which make point 5 part movable in the direction which met the penholder, point 5 part moves when a point 5 contacts a writing side, and a mechanical or conductive change etc. detects it is common knowledge as a technique already applied to the pen of a tablet etc.

[0057] Drawing 3 is the example of an image which read a medium 1 like drawing 1 with the coordinate input unit 4. If photographic coverage by the coordinate input device 4 is carried out more than twice even if there is little width

of face of the code symbol 3, at least one code symbol 3 will go into image reading—within the limits. Here, the code symbol 3 in the frame 11 of drawing 3 is read, and if the result of having decoded the coordinate information included in it with the microcomputer 8 is obtained with "0102", the coordinate input unit 4 can detect the coordinate location on a medium 1 in the precision of the magnitude of the square frame 11 shown in drawing 3 R> 3 at least (in addition, also see JP,61-296421,A about this technique).

[0058] However, now, resolution is very as small as several mm – 1cm. and there is a problem practically. Or in order to raise the precision of the printer which prints the code symbol 3, or the image reader 6 in order to make resolution high and to make the code symbol 3 small. and to use a lot of code symbols 3, the cost of printing starts. and it is not realistic.

[0059] So, with the gestalt of operation of this invention, an image as shown in drawing 3 is processed with a microcomputer 8. and the location of the code symbol 3 in this image, the sense, and the amount of distortion are detected. Namely, what is necessary is just to prepare a special pattern space which is easy to detect a location besides the data area of coordinate information. the sense. and the amount of distortion in the code symbol 3. For example, although drawing 4 is the QR code, it discovers three special fields a, b, and c, respectively. and can detect the location of the code symbol 3 whole. the sense and the amount of distortion by each location. Here, for simplification of explanation, the central point on an image is the location of a point 5, and it assumes that it is perpendicular to space, and the following explanation is given. If a two dimensional code will be decoded by this image supposing the image shown in drawing 5 is obtained, the code symbol 3 of drawing 5 will be decoded, for example, the coordinate information "0102" will be acquired.

[0061] On the other hand, the thing illustrating the physical relationship of an image and the code symbol 3 is shown in drawing 6 for explanation. This drawing 6 shows the example the core of an image 12 and whose core of the code symbol 3 correspond (that is, offset of both centers to center is 0). Since the printing position of the code symbol 3 is known, the core of the code symbol 3 of "0102" is acquired, for example for coordinate information from the upper left of space with (10mm, 20mm). On the other hand, since the core of an image 12 and the core of the code symbol 3 are in agreement, if it is in the location in a space coordinate (10mm, 20mm), it can ask for a point 5.

[0062] Moreover, drawing 7 is another example of the picturized image 12 (another example of drawing 5). Drawing 8 is example of another equivalent to drawing 6 . In the example shown in this drawing 7 and drawing 8 , there is no location of the code symbol 3 in the core of a photography image, and the core of the code symbol 3 and the core of a photography image have the offset values d and e. It can calculate. the amount of offset, for example, the pixel numeric value, on a photography image. Since the absolute size of the code symbol 3 is furthermore known, it can ask for the absolute size of the offset values d and e. For example, if an offset value can be found with (2mm, 5mm).

Although the example of drawing 3 and drawing 6 was an ideal image for simplification of explanation, generally the image read with the image reader 6 turns into an image which the code symbol 3 inclined or was distorted. The image 12 which illustrated the code symbol 3 only by the outer frame is drawing 9 . At this time, the rotation of the body 7 of equipment can be found by inclination alpha of the code symbol 3 in an image. Moreover, the distortion f of the code symbol 3 shows the amount of inclinations of the body 7 of equipment. Furthermore, although the location of a point 5 is not necessarily the core of an image 12, since the physical relationship of an image 12 and a point 5 is fixed, it can ask also for this. Therefore, from the calculated value of the amount of each of the data which decoded the code symbol 3, the location of the code symbol 3, an inclination, and the amount of distortion, it can ask for the location of a point 5 more correctly, and, thereby, a coordinate detection means can be realized.

[0064] If the location of the point 5 on a medium 1 is continuously detected using such a coordinate input unit 4, it can ask for the migration locus of the point 5 on a medium 1. Moreover, if the equipment which detects whether the above points 5 touch the writing side is formed, it can ask for the writing locus when writing down on a medium 1 by the body 7 of equipment. The data of the writing locus at that time are stored in the storage of a microcomputer 8. Moreover, when not forming a microcomputer 8 as mentioned above, it memorizes to the storage of an information processor 9.

[0065] Now, as for the code symbol 3, it is desirable to have encoded the document information which is data which can identify a document 2 uniquely as mentioned above. Then, when adding the code symbol 3 which expresses document information as the code symbol 3 showing coordinate information independently, first, using the image reader 6 of the coordinate input unit 4, document information is read and writing actuation is performed after that. Then, document information and coordinate information are inputted into the coordinate input unit 4 like for example, "c:¥MyDocument¥Patent.doc", "10, 10", "10, 11", "10, 12.5", and "11, 14" —. Even if this reads document information after writing actuation, it is the same.

[0066] Moreover, like c:¥MyDocument¥Patent.doc, and "11, 14", when document information is added to the code symbol 3 showing coordinate information, the information with which coordinate information and document information were doubled is inputted into the coordinate input unit 4. [c:¥MyDocument¥Patent.doc, "10, 12.5", and] [c:¥MyDocument¥Patent.doc, "10, 11".] [c:¥MyDocument¥Patent.doc, "10 10",] In addition, what is necessary is just to insert predetermined separator data. when a point 5 separates from a writing side.

[0067] Furthermore, before starting the note to a medium 1, you may make it detect in advance the color information on the ink of the note used by the body 7 of equipment. In this case, if a note is started, it can be made to reappear to the color used not only for the form of an alphabetic character, a graphic form, etc. but for the note

notes or was actually taken by attaching the color information detected before that to the detected document information Sagitta label information.

[0068] For example, suppose that the color of the ink used now is red. When the ink cartridge used by the body 7 of equipment is changed to red, it enables it to detect the coordinate input unit 4 as it is red ink. For example, the sensor which has been formed in the body 7 side of equipment by having attached to the ink cartridge the mark that he is red etc., and attaching this in the body 7 of equipment and which is not illustrated can detect. Next, with the coordinate input unit 4, as described above, if document information Sagitta label information is acquired like "c:\MyDocument\Patent.doc", "10, 10", "10, 11", "10, 12.5", and "11, 14" --, with the coordinate input unit 4, it will consider as the data which added color information to this data. This has realized the data-processing means. This is set to red%c:\MyDocument\Patent.doc, and "11, 14". [red%c:\MyDocument\Patent.doc, "10, 12.5". and] [red%c:\MyDocument\Patent.doc, "10, 11".] [red%c:\MyDocument\Patent.doc, "10, 10" (or "c:\MyDocument\Patent.doc, red10, 10")]

[0069] The coordinate information acquired as mentioned above, document information, and color information are stored in the storage of a microcomputer 8, and are transmitted to an information processor 9 from a microcomputer 8. The document data of the document 2 which is a former document of a medium 1 are beforehand memorized by the hard disk of an information processor 9 etc. at the information processor 9. This has realized the 1st storage means. And the document data of a document 2 are updated so that the aforementioned coordinate information, document information, and color information may be added to the document data of a document 2, as if it corrected the document 2 in the contents notes of was taken on the medium 1 with the body 7 of equipment. This has realized the addition means.

[0070] Since a former document can be identified uniquely and a writing locus can be found in any case, it is easy to add such information to a former document automatically. What is necessary is to read an electronic former document from document information, such as a document name, and just to add color information to the document at the writing locus using coordinate information, and a pen. The aforementioned coordinate information, document information, and color information are acquired from the coordinate input unit 4, and even if it can build easily the system of electronic-filing-document edit which is added to a former document and it uses the so-called well-known word processor software, if the macro function is used, it is easily realizable.

[0071] In addition, it is not necessary to necessarily carry out the aforementioned processing in which the writing locus to a former document is corrected to real time for example, and once stores in the memory in a microcomputer 8, an information processor 9 is connected with a microcomputer 8 later, and it may be made to perform retouch to a former document. At this time, it is desirable that retouch to a former document is not performed suddenly, but it is made to carry out after asking the operator of an information processor 9 for a check. Furthermore, it is desirable for the operator of an information processor 9 to also make selectable the former document which corrects by actuation of an information processor 9, and even when there is no document information which identifies a former document as the code symbol 3 in this case, it is possible to correct by selecting a suitable former document.

[0072] Next, the case where the rewritable medium 1 is used as a medium 1 is explained with reference to drawing 10. This medium 1 has the base material 13, and the laminating of the code symbol layer 14 by which the code symbol 3 is embedded on this base material 13, a recording layer 15, an interlayer 16, and the protective layer 17 is carried out one by one. This base material 13 consists of resin of white with good thermal conductivity, and an interlayer 16 and a protective layer 17 consist of good colorless resin of translucency.

[0073] Moreover, since the given heat is effectively used as shown in drawing 11, the adiabatic under-coating layer 18 can be formed between a base material 13 and a recording layer 15. The under-coating layer 18 can be formed by applying an organic or inorganic minute hollow object particle using binder resin. Three layers of code symbols which have the document information which shows the coordinate information which shows a writing locus, the whereabouts of a document, a document name, ** 1 JI, etc. are prepared into the under-coating layer 18. Furthermore, the under coat layer aiming at osmosis prevention of the recording layer ingredient to a base material 13, and an adhesive improvement of a recording layer 15 and a base material 13 can also be prepared.

[0074] This code symbol 3 is formed in invisible ink, as described above (about an invisible ingredient, a detail is mentioned later). About the code symbol 3 used here, since the numbers of classifications run short in a bar code which was described above when a document [/ other than coordinate information] needs to be variously classified as an object for ID of a document, a two dimensional code is used. Since the code of about 20 figures is generable by expanding to two-dimensional, it also becomes possible to attach an absolute identification number (for example, serial number) as document information to the number of the media 1 currently used all over the world. That is, ID of the document drawn up once is fixed and it can carry out to the document to which ID which has only one in the world was attached, i.e., the document which has only one in the world. Moreover, light other than the light which was described above is reflected, the invisible ingredient a user stops being able to be visible easily is used, and as ID of a document does not distinguish immediately, it can raise security.

[0075] In this case, since an absolute identification number is given to the creation time of a medium 1 as document information, when actually printing a medium 1 by the printer, it is necessary to associate identification information (for example, "c:\MyDocument\Patent.doc") which is the information which identifies the document data of the document 2 to print, and document information which is an absolute identification number. Then, after turning out which medium 1 printed what document 2 and editing into with this information processing system, it becomes possible to correct a former document. That is, if the document 2 of the identification information

MyDocument\Patent.doc is printed to the medium 1 which the document information "123456" attached using the printer 10 (refer to drawing 2) connected to the information processor 9. an information processor 9 will enable it automatically to perform correlation of "123456" and "c:\MyDocument\Patent.doc." This has realized the correlation processing means. This associated data and the document data of the document 2 printed by the medium 1 are memorized by the hard disk of an information processor 9 etc. This has realized the 1st and 2nd storage means. Therefore, when it writes down on the medium 1 after printing with the coordinate input unit 4 The information for which the aforementioned correlation memorized by the document information read with the image reader 6 and the information processor 9 was made is collated. The document data of the document 2 printed by the medium 1 are called, and document data are updated so that the coordinate information and color information which were read with the image reader 6 to the document data may be added automatically. This has realized the addition means.

[0076] Next, as described above, red ink is used for the coordinate input unit 4, and if the document information which is the number of a medium 1, and coordinate information are inputted like "123456", "10. 10". "10. 11". "10. 12.5", and "11. 14" —, the following data will be created with the coordinate input unit 4. That is, it is red¥123456, and "11. 14" —. [red¥123456, "10. 12.5", and] [red¥123456, "10. 11" that consist of color information, document information, and coordinate information,] [red¥123456, "10. 10" (10 or "123456. red, 10"),] If these are transmitted to an information processor 9, a former document can be specified as the information "123456" associated as mentioned above by "c:\MyDocument\Patent.doc". and retouch information can be made to overwrite in red on a former document "c:\MyDocument\Patent.doc." Processing explained above may be performed for itself [printer 10] which was connected to the information processor 9, and an information processor 9 may be made to perform it.

[0077] A recording layer 15 is a reversibility recording layer which can perform informational visible presenting reversibly, and can use a sensible-heat method, a magnetic-recording method, a photochromic recording method, an electrochromic method, etc. Especially, in the gestalt of operation of this invention, an optical property changes reversibly by thermal recording, i.e., heat energy, and the recording layer 15 in which record and elimination of visible information are possible is mentioned as a desirable thing. The writing by heat energy is easy to print by the printer of for example, a heat sublimation mold.

[0078] As an ingredient which can perform reversible record with this heat energy, it is mentioned at least as what has the recording layer containing a leuco color and a developer, the desirable resin layer containing the particle of an organic low molecular weight compound, and the desirable reversibility recording layer that consists of recording layers containing low-molecular or a polymer liquid crystal compound further. The reversibility recording layer containing a leuco color and a developer can be formed by distributing a leuco color and a developer for example, into a resin binder. As a leuco color, well-known color precursors, such as a phthalide system compound, an ASAFUTARIDO system compound, a fluoran system compound, a phenothiazin system compound, and a leuco auramine system compound, are mentioned, for example. Specifically, the well-known leuco color of a publication can be used for JP,5-124360,A. A developer is a compound with the structure which controls the structure, for example, a phenolic hydroxyl group, of having the development ability which makes intramolecular coloring a leuco color, a carboxylic-acid radical, a phosphoric-acid radical, etc. and the cohesive force between molecules, for example, the structure which the long-chain hydrocarbon group connected. The divalent radical or divalent aromatic hydrocarbon radical which may mind the divalent radical containing a hetero atom, and contains a hetero atom also in a long-chain hydrocarbon group may be contained. Specifically, the well-known developer indicated by JP,5-124360,A etc. can be used.

[0079] As resin which a recording layer 15 consists of a resin layer which contains a leuco color and a developer at least, and forms a recording layer For example, a polyvinyl chloride, polyvinyl acetate, a vinyl chloride vinyl acetate copolymer, A polyvinyl acetal, a polyvinyl butyral, a polycarbonate, Polyarylate, polysulfone, polyether sulphone, polyphenylene oxide, Fluorine resin, polyimide, a polyamide, polyamidoimide, polybenzimidazole, Polystyrene, a styrene system copolymer, phenoxy resin, polyester, Aromatic polyester, polyurethane, polyacrylic ester, polymethacrylic acid ester, An acrylic ester system copolymer, a maleic-acid system copolymer, an epoxy resin, (Meta) An alkyd resin, silicone resin, phenol resin, polyvinyl alcohol, Denaturation polyvinyl alcohol, a polyvinyl pyrrolidone, polyethylene oxide, Polypropylene oxide, methyl cellulose, ethyl cellulose, a carboxymethyl cellulose, hydroxyethyl cellulose, starch, gelatin, and casein can be mentioned.

[0080] Moreover, for the purpose of raising the reinforcement of the coat of a recording layer 15, various curing agents and a cross linking agent can also be added. The compound which has an isocyanate radical as an example of such a curing agent and a cross linking agent, polyamide epichlorohydrin resin, a compound with an epoxy group, glyoxal, a zirconium compound, etc. can be mentioned. Furthermore, a recording layer can also be prepared using electron ray hardenability or an ultraviolet-rays hardenability binder. The compound which has an ethylene nature unsaturated bond as this binder is mentioned.

[0081] As these examples, the Pori (meta) acrylate 2. aliphatic series of the polyhydric alcohol of 1. aliphatic series, an alicycle group, and aromatic series, and a polyalkylene glycol, An alicycle group, aromatic series, To the polyhydric alcohol of aroma aliphatic series, polyalkylene oxide Pori of the polyhydric alcohol made to add Acrylate 3. polyester poly (Meta) An acrylate 4. polyurethane poly (meta) acrylate 5. epoxy poly (meta) acrylate 6. polyamide poly (meta) acrylate 7. Pori (meth)acryloyloxy alkyl phosphoric ester 8. (meta) acryloyl radical A side chain. (Meta) Or the vinyl system or diene series 9. monofunctional (meta) acrylate which it has at the end, The monochrome which has the cyano compound 11. ethylene nature unsaturated bond which has vinyl pyrrolidone and an acryloyl

(meta) compound 10. ethylene nature unsaturated bond or polycarboxylic acid, and those alkali-metal salts, Ammonium salt, The monochrome which has 12. ethylene nature partial saturation (meta) acrylamides, such as an amine salt, or alkylation (meta) acrylamide, its polymer 13. vinyl lactam, and a polyvinyl lactam compound 14. ethylene nature unsaturated bond Or the poly ALGOL which has the ester 16. ethylene nature unsaturated bond of the alcohol which has a polyether and its ester 15. ethylene nature unsaturated bond and its ester 17. styrene, The aromatic compound 18. (meth)acryloyloxy radical which has one or more ethylene nature unsaturated bonds, such as a divinylbenzene, a side chain, Or the polymer of the compound of one to silicone compound 20. aforementioned 19 publication which has the polyorganosiloxane system compound 19. ethylene nature unsaturated bond which it has at the end, or an oligo ester (meta) acrylate conversion object is mentioned.

[0082] In forming a recording layer 15 using an ultraviolet-rays hardenability binder, it mixes and uses a photopolymerization initiator. As a photopolymerization initiator, JI or the acetophenones like a TORIKURORO acetophenone, 1-hydroxy cyclohexyl phenyl ketone, a benzophenone, a Michler's ketone, a benzoin, benzoin alkyl ether, benzyl dimethyl ketal, a tetramethyl thiuram MONOSARU fight, thioxan tons, an azo compound, a diaryl iodonium salt, a triarylsulfonium salt, a bis(TORIKURORO methyl) triazine compound, etc. are mentioned.

[0083] The recording layer 15 using these leuco colors and developers is colored and decolorized in the process shown in drawing 12. If an early decolorization condition (A) is heated, more than by temperature T1, a leuco color and a developer will carry out melting mixing, and will color, and when (B) and this condition are quenched, it is fixed with a coloring condition (C). if the coloring condition (C) is heated — the temperature T2 lower than the coloring temperature T1 -- decolorizing — (D) — if it cools, it will be in the same decolorization condition as the first stage. Moreover, depending on temperature, that transparency is the recording layer which changes reversibly, and the resin layer in which a recording layer 15 contains the particle of an organic low molecular weight compound uses the property in which the light-scattering nature of this recording layer 15 changes reversibly depending on temperature, and is constituted.

[0084] The resin used for a recording layer 15 is an ingredient which affects the transparency at the time of the maximum transparence while forming the layer which carried out distributed maintenance of the organic low-molecular matter at homogeneity. For this reason, a resin base material has good transparency and its stable and good resin of membrane formation nature is mechanically desirable, as such resin — pile-izing of a polyvinyl chloride; vinyl chloride vinyl acetate copolymer, a vinyl chloride-vinyl acetate-vinyl alcohol copolymer, a vinyl chloride-vinyl acetate-maleic-acid copolymer, a vinyl chloride-acrylate copolymer, etc. — vinylidene-chloride system copolymer; polyester; polyamide; polyacrylate or polymethacrylates, such as a vinyl system copolymer; polyvinylidene chloride and vinylidene-chloride-vinyl chloride copolymer and a vinylidene-chloride-acrylonitrile copolymer, or acrylate-methacrylate copolymer; silicon resin is mentioned. These are independent, or they are used by two or more sorts, mixing.

[0085] Generally as an organic low molecular weight compound used for a recording layer 15, an about 50-150-degree C thing is used preferably the melting point of 30-200 degrees C. As such an organic low molecular weight compound ** alkanol; Alkane diol; Halogen alkanol or halogen alkane diol; — alkylamine; — alkane; — alkene; ANOREKIN; — halogen alkane; — halogen alkene; — halogen alkyne; — cycloalkane; — cycloalkene; — cycloalkyne; — saturation — or partial saturation monochrome Or dicarboxylic acid or these ester, an amide, or ammonium salt; Saturation, partial saturation halogen fatty acids, or these ester, An amide or ammonium salt; Allyl compound carboxylic acids or those ester, An amide or ammonium salt; the carboxylate of halogen allyl compound carboxylic acids or those ester, an amide, ammonium salt; thioalcohol; thiocarboxylic acids or those ester, an amine, or an ammonium salt; thioalcohol etc. is mentioned. These are independent, or they are used by two or more sorts, mixing. the carbon number of these compounds — 10-60 — desirable — 10-38 — especially 10-30 are good. Even if saturated by the amount of [in ester] alcoholic base. it does not need to be saturated, and halogenation may be carried out.

[0086] Anyway, as for an organic low molecular weight compound, it is desirable that it is the compound which contains at least one sort of oxygen, nitrogen, sulfur, and a halogen, for example, -OH, -COOH, -CONH, -COOR, -NH-, -NH2, -S-, -S-S-, -O-, a halogen, etc. in a molecule. Furthermore, what is necessary is just to combine other ingredients with which the above-mentioned organic low molecular weight compound is suitably combined, or such an organic low molecular weight compound and the melting point differ from each other, in order to extend the width of the temperature which can carry out the rarefaction. Although these are clarified on specifications, such as official reports, such as JP.63-39378.A and JP.63-130380.A. and Japanese Patent Application No. No. 14754 [63 to], Japanese Patent Application No. No. 140109 [one to], they are not limited to these.

[0087] The transparence and nebula of the recording layer 15 which consists of these organic low-molecular one and resin are done in the process shown in drawing 13. In drawing 13 showing change of the transparency by heat, the reversible recording layer which uses as a principal component the organic low molecular weight compound distributed resin and in this resin is in a nebula opaque condition in the ordinary temperature not more than T0. If this is heated to temperature T2, even if it will become transparence and will return to the ordinary temperature not more than T0 again in this condition, it is still transparence. Furthermore, if it heats to the temperature more than T3, it will be in the middle translucent condition of the maximum transparency and the maximum opacity. Next, if this temperature is lowered and it goes, it will return to the first nebula opaque condition, without taking a transparence condition again. In addition, when it cools in ordinary temperature, i.e., the temperature not more than T0, after heating the thing of this opaque condition to the temperature between T1 - T2, transparence and the middle condition of being opaque can be taken. Moreover, if it returns to ordinary temperature after heating again what

opaque condition again.

[0088] Furthermore, a principal chain mold, side-chain mold molecule liquid crystal, etc. with which a recording layer 15 is used for the recording layer containing low-molecular or a polymer liquid crystal and with which the meso gene (molecule in which liquid crystallinity is shown) was combined with the principal chain or the side chain as a polymer liquid crystal are used. A polymer liquid crystal can usually carry out the polymerization of the meso gene compound (it is called a meso gene monomer) in which a polymerization is possible, or can make the meso gene compound in which an addition reaction is possible able to add to reactant polymers, such as a hydrogenation polysilicon cone, and can be manufactured. Such a technique is indicated by Makromol.Chem., 179, p273 (1978) and Eur. Polym.J., 18, p651 (1982) and Mol.Cryst.Liq.Cryst., 169, p167 (1989), etc. The polymer liquid crystal used for the gestalt of this operation can also be manufactured by the same approach.

[0089] As a meso gene compound in which a meso gene monomer and an addition reaction are possible A biphenyl system, a phenyl benzoate system, a cyclohexylbenzene system, An azoxybenzene system, an azobenzene system, an azomethine system, a phenyl pyrimidine system, The alkyl spacer of desirable predetermined die length is minded (biphenyl system, meso gene). The various compounds which die acrylic ester radical, die methacrylic ester radical, or the vinyl group combined are raised as a typical thing.

[0090] The invisible ingredient is described at the last. As a thing optically detectable in an invisible ingredient. light is absorbed, it excites by the ingredient detectable [with the difference of the reflectivity], or the absorption of light, fluorescence is emitted, and the ingredient which can detect it is used. The ingredient of absorption in a visible region which absorbs light and can be detected according to the difference of the reflectivity is low, and the ingredient which has absorption in the other wavelength field can be used for it. The aforementioned coordinate information and document information are formed from the part which was formed with these ingredients and to absorb, and the part to reflect, and can detect information from the difference of the optical density in the outside of the visible region by these absorption/reflection. Moreover, since the difference of the optical density of a visible region is very small, with the naked eye, these are hardly checked by looking. About exposure light, it is desirable that it can recognize optically by the exposure of infrared light in consideration of luminous-intensity-distribution nature, such as degradation of the medium inclusion by ultraviolet radiation.

[0091] As an infrared-absorption ingredient of an organic system, cyanine system coloring matter, naphthoquinone system coloring matter, phthalocyanine system coloring matter, anthraquinone system coloring matter, diol system coloring matter, triphenylmethane color system coloring matter, etc. are mentioned. Since these have absorption inorganic system which does not have absorption but has absorption in an infrared region is more desirable in a visible region. For example, the compound containing Nd, Yb, In, Sn, and Zn can be used at least. Especially, compounds, such as these metals and these oxides, a sulfide, and a halogenide, are desirable, and these compounds are white or light blue, and are suitable for invisibility-izing an information carrier, as the concrete example of these compounds — an oxidation ytterbium, tin oxide, a zinc oxide, a sulfuration ytterbium, zinc sulfide, a chlorination ytterbium, indium chloride, *****, a zinc chloride, and bromination — an ytterbium and bromination — an indium and indium-tin mixed oxide or an indium-tin mixed oxide, and one sort chosen from an alumina, a barium sulfate, a silicon dioxide, and a calcium carbonate of mixture etc. is mentioned.

[0092] Moreover, the salt of these and an acid is also an effective infrared-absorption ingredient including Yb, In, Sn, and Zn. As these concrete examples, a sulfuric-acid ytterbium, a zinc sulfate, indium sulfate, a nitric-acid ytterbium, nitric-acid tin, a perchloric acid ytterbium, a carbonic acid ytterbium, zinc carbonate, a carbonic acid indium, an acetic-acid ytterbium, zinc acetate, acetic-acid tin, a nicotinic-acid ytterbium, a phosphoric-acid ytterbium, phosphoric-acid zinc, phosphoric-acid tin, an oxalic acid ytterbium, oxalic acid zinc, tin oxalate, etc. are mentioned.

[0093] Moreover, the fluorescence wavelength by which the ingredient which excites by the absorption of light, emits fluorescence, and can detect it is emitted, and the thing which can detect with a difference on the strength are used. The ingredient which excites by infrared light and emits fluorescence in consideration of lightfastness, absorbed and there is an organometallic compound which contains Nd at least as an optical-activity element as an ingredient which emits fluorescence. It is chosen from carboxylic acids, ketones, ether, and amines as an organic compound in these organometallic compounds. As these concrete examples, cinnamic acid neodymium, naphthoic-acid neodymium, etc. are mentioned. Moreover, the organometallic compound containing Nd and Yb is more desirable as an optical-activity element, and a cinnamic acid neodymium ytterbium compound salt, a benzoic-acid neodymium ytterbium compound salt, a naphthoic-acid neodymium ytterbium compound salt, etc. are mentioned as these concrete examples.

[0094] Moreover, the oxygenated acid chloride compound containing one or more sorts of elements of Nd, Yb, and Er can also be used as an infrared fluorescence ingredient. As a concrete example of this oxygenated acid chloride compound, a phosphate compound, a vanadate compound, a boric-acid pile compound, a molybdate compound, etc. are mentioned. Furthermore, the compound which contained Fe and Er as an optical-activity element, and contained at least one or more sorts of elements chosen as others from Sc, Ga, aluminum, In, Y, Bi, Ce, Gd, Lu, and La can also be used as an infrared fluorescence ingredient. Moreover, the compound containing at least one or more sorts of elements which contained Yb as an optical-activity element, in addition were chosen from Sc, Ga, aluminum, In, Y, Bi, Ce, Gd, Lu, and La can also be used as an infrared fluorescence ingredient. Furthermore, one or more sorts of

rare earth content organic compounds which made the infrared region grasp the organic compound which has absorption and which were chosen from Nb, Yb, and Er can also be used as an infrared fluorescence ingredient. It can be chosen as these infrared regions from poly methine system coloring matter, anthraquinone system coloring matter, diol system coloring matter, phthalocyanine system coloring matter, indophenol system coloring matter, azo system coloring matter, etc. as an organic compound which has absorption.

[0095] [the gestalt 2 of implementation of invention] -- the information processing system which is the gestalt of another implementation of this invention is explained as a gestalt 2 of implementation of invention.

[0096] Drawing 14 is the top view of the medium 1 used with this information processing system. The document is visually recorded in the condition which can be read, generally human being is constituted from paper, cloth, plastics, etc. by the medium 1, and it is a sheet-like. A sign 2 is the document itself which human being can read, and are an alphabetic character, drawing, a table, etc. A sign 3 is the code symbol 3 which can be read optically, and although it is mentioned later in detail, generally they are a bar code, a two dimensional code, etc.

[0097] When human being prints a document 2 optically in it visually in the wavelength region which can be read although he cannot be read for human being in the code symbol 3 in the wavelength region which can be read as the extinction wavelength or luminescence wavelength of a document 2 and the ink of the code symbol 3 was not lapped mutually, a document 2 and the code symbol 3 can be printed in piles, and it can read independently. As invisible ink, there is stealth ink by **** Maxell and the sheet for thermal transfer printers is also prepared for human being at this, for example. This does not look almost to human being, but can be read optically in an infrared region. On the other hand, conversely, since transparent black ink is also marketed, if a commercial hot printing method printer is used using these ink, it will become possible easily to print the document 2 visible for human being and the invisible code symbol 3 by the printer in an infrared region (it is as the gestalt 1 of implementation of invention having explained the invisible ink ingredient).

[0098] In the example of drawing 14, the code symbol 3 is arranged in the shape of a matrix. The mark which means the coordinate of the code symbol 3 in the field where the code symbol 3 of a medium 1 is printed is encoded by the code symbol 3. For example, as for code symbol 3a at the upper left of drawing 14, "0101" is encoded, and "0102" code symbol 3c is encoded for code symbol 3b with "0202" "0201" code symbol 3d. Or as other examples, the part whose part of "ab" code symbol 3c the part of "aa" code symbol 3b is "ba" and code symbol 3d for the part of code symbol 3a may be encoded with "bb." Thus, if two or more code symbols 3 can identify uniquely respectively, it will be desirable to arrange the code symbol 3 regularly [encode regularly and] like drawing 14 anything, although it is good and there is especially no constraint also in arrangement.

[0099] If an example is given more concretely, the upper left of space will be made into a zero and a x axis and the y-axis will be taken to the right and down. Here, it arranges so that the core of the code symbol 3 of "0101" may come to the location of (10mm, 10mm) of a x axis and the y-axis, and in the location of (10mm, 20mm), the code symbol 3 of "0201" is arranged in the code symbol 3 of "0102", and the location of (20mm, 10mm).

[0100] Moreover, optically, as a code symbol 3 which can be read, although the DataMatrix code is shown, some which are otherwise common knowledge partly as same code symbol 3 are shown in drawing 14, for example, CodeOne, AztecCode, MaxiCode, QRCode, etc. can be used for it. Moreover, a 1-dimensional bar code and an original code may be used.

[0101] The information encoded as a code symbol 3 is furthermore, as it is shown in "01020506" which means the thing of the 6th character which does not mean the physical location on a medium 1 and means the logical location of a document, for example, the 5th step failure in an examination of the Chapter 1 second article.

[0102] Although it is desirable to record on as large the range of a medium 1 as possible as for the code symbol 3, it is not necessary to necessarily record on the whole surface. For example, when printing by the printer, the perimeter of space is nonprintable range in many cases. When such, it is not necessary to necessarily print into such a part.

[0103] Although only the coordinate information which shows the location on the front face of a medium 1 is encoded by the code symbol 3 in the example of drawing 14, it is desirable to also encode and record the document information which is the information for identifying a document 2 uniquely. As document information which identifies a document uniquely, there are the information on a file name, the information with which the drive name, the directory name, and the file name were doubled, URL, etc., for example. Which range the information on is encoded should just set according to the purpose of use. Although the code symbol 3 which encoded this document information may be arranged to a medium 1 independently [the code symbol 3 showing coordinate information], it can also be encoded as the code symbol 3 showing coordinate information at coincidence.

[0104] For example, document information and coordinate information may be encoded as one code symbol 3 that it seems that "c:\MyFile\Patent.doc0101" should be encoded for code symbol 3a, and "c:\MyFile\Patent.doc0102" should be encoded for code symbol 3b. For example, since amount of information of this amount becomes the size like several mm angle in the case of a two dimensional code, even if it combines both, it can encode enough.

[0105] The electric connection condition of the coordinate input unit 4 used with the information processing system of this invention is the same as that of what was described above with reference to drawing 2. That is, as shown in drawing 2, this coordinate input unit 4 is equipped with the writing implement-like body 7 of equipment with which people can have in a hand and can perform writing actuation. If required for the point 5 of this body 7 of equipment, the point parts of a writing implement, i.e., a ball-point, and a mechanical pencil etc. are attached in it, and it is good for it also as a note being actually possible. The image reader 6 formed in the flank of the body 7 of equipment etc. is equipment which consists of optoelectric-transducer 6a, such as CCD, and optical-system 6b which consists of a

perspective view in the condition of having the body 7 of equipment in a hand, and writing down on the medium 1 is shown in drawing 15.

[0106] The microcomputer 8 is carried in the body 7 of equipment, and the image reader 6 is connected to this microcomputer 8. The various processings based on the image on the medium 1 read with the image reader 6 are made with a microcomputer 8. That is, the read code symbol 3 is decoded and the location of the code symbol 3 on the read image, the sense, and the amount of distortion are detected. This has realized calculation means, such as a decoding means and the amount of distortion. Moreover, the information processors 9, such as PC of the exterior of the body 7 of equipment, and connection are possible for a microcomputer 8, and an output is possible for it to an information processor 9 in the data stored into the microcomputer 8. In addition, it replaces with carrying a microcomputer 8 in the body 7 of equipment, the image reader 6 is connected with an information processor 9, and it may be made to perform said processing performed with a microcomputer 8 with an information processor 9. In addition, in drawing 2, the interface of a power source, and the microcomputer 8 and information processor 9 which supply power to the image reader 6, a microcomputer 8, etc. is omitting illustration.

[0107] It is desirable to form the equipment which detects whether the part of a point 5 touches the writing side on the body 7 of equipment. That is, the technique in which make point 5 part movable in the direction which met the penholder, point 5 part moves when a point 5 contacts a writing side, and a mechanical or conductive change etc, detects it is common knowledge as a technique already applied to the pen of a tablet etc.

[0108] Drawing 16 is the example of an image which read a medium 1 like drawing 14 with the coordinate input unit 4. If photographic coverage by the coordinate input device 4 is carried out more than twice even if there is little width of face of the code symbol 3, at least one code symbol 3 will go into image reading—within the limits. Although the adjoining code symbol 3 is also read and it goes into within the limits in fact, it is omitting in drawing 16. Since the right pair of the front face of a medium 1 and the image pick-up side of the image reader 6 has not necessarily been carried out as shown in drawing 15, as shown in drawing 16, the image of the read code symbol 3 has distortion. Here, the code symbol 3 in the frame 11 of drawing 16 is read, and if the result of having decoded the coordinate information included in it with the microcomputer 8 is obtained with "0102", the coordinate input unit 4 can detect the coordinate location on a medium 1 in the precision of the magnitude of the square frame 11 shown in drawing 16 R> 6 at least (in addition, also see JP,61-296421,A about this technique).

[0109] However, now, resolution is very as small as several mm ~ 1cm, and there is a problem practically. Or in order to raise the precision of the printer which prints the code symbol 3, or the image reader 6 in order to make resolution high and to make the code symbol 3 small, and to use a lot of code symbols 3, the cost of printing starts, and it is not realistic.

[0110] So, with the gestalt of operation of this invention, the image 11 read with the image reader 6 as shown in drawing 16 is processed with a microcomputer 8, and the location of the code symbol 3 in this image 11, the sense, and the amount of distortion are detected. It is as the gestalt 1 of implementation of invention having explained the concrete means.

[0111] If a two dimensional code is decoded by the image as shown in drawing 16, the data "0102" will be obtained, for example. Since the printing position of the code symbol 3 is known, the upper left of the space of a medium 1 shows that the core of the code symbol 3 which is "0102", for example is (10mm, 20mm) with xy coordinate. On the other hand, supposing the size of the code symbol 3 is also known, for example, it is 5mm of every direction, if the coordinate location of four angles of the code symbol 3 is also in (7.5mm, 17.5mm), (7.5mm, 22.5mm), (12.5mm, 17.5mm), and (12.5mm, 22.5mm), respectively, it can ask. It is known that the relational expression of the coordinate location of four angles of these code symbol 3 will be given by the degree type.

[0112]

[Equation 1]

$$x_r = \frac{b_1 x_s + b_2 y_s + b_3}{b_7 x_s + b_8 y_s + 1}$$

$$y_r = \frac{b_4 x_s + b_5 y_s + b_6}{b_7 x_s + b_8 y_s + 1}$$

[0113] It is a coordinate on the image which suffix r read by this formula and read the coordinate on the space of a medium 1, and suffix s with the image reader 6. Since there are eight unknowns in this formula, if the coordinate location of four angles of the code symbol 3 is known as mentioned above, all multipliers (projective-transformation multiplier) can be found. Next, if this multiplier and formula are used, the coordinate on the space to the point of the arbitration on an image can be searched for. Therefore, the coordinate on the space of the medium 1 corresponding to the location of a point 5 can be searched for. In addition, the point on the image which corresponds point 5 is also be searched for from the physical relationship of a point 5 and the image reader 6, and when the point 5 is reflected on the image, it may be surveyed. In any case, since the physical relationship of a point 5 and the image reader 6 is immobilization, it can ask easily. If the location of a point 5 is continuously detected using such a coordinate input unit 4, it can ask for the migration locus of a point 5. If the equipment which detects whether the point 5 touches the writing side as aforementioned is formed, it can ask for a writing locus. Writing locus data may

be stored in the storage of the microcomputer 8 within the body / of equipment, and may be taken out to an information processor 9 on real time.

[0114] When the data which encoded the reading image of the code symbol 3 are obtained, a microcomputer 8 arranges the aforementioned contents and explains the procedure in the case of searching for the coordinate on the space of the medium 1 corresponding to the location of a point 5 from the data with reference to the flow chart of drawing 17. First, a microcomputer 8 searches for the coordinate on the space of the medium 1 in the core of the code symbol 3 from the encoding result of the code symbol 3 (step S1). And the coordinate on the space of the medium 1 in four angles of the code symbol 3 is searched for from the coordinate on the space of the medium 1 in the core of this code symbol 3 (step S2). It asks for a projective-transformation multiplier as mentioned above from the coordinate on the space in four angles of this code symbol 3, and the coordinate on an image (step S3). And the coordinate on the space of the medium 1 in a point 5 can be searched for from a point 5, the physical relationship of the image reader 6, and a projective-transformation multiplier (step S4).

[0115] Now, as for the code symbol 3, it is desirable to have encoded the document information which is data which can identify a document 2 uniquely as mentioned above. Then, when adding the code symbol 3 which expresses document information as the code symbol 3 showing coordinate information independently, first, using the image reader 6 of the coordinate input unit 4, document information is read and writing actuation is performed after that. Then, document information and coordinate information are inputted into the coordinate input unit 4 like for example, "c:\MyDocument\Patent.doc", "10, 10", "10, 11", "10, 12.5", and "11, 14" —. Even if this reads document information after writing actuation, it is the same.

[0116] Moreover, like c:\MyDocument\Patent.doc, and "11, 14", when document information is added to the code symbol 3 showing coordinate information, the information with which coordinate information and document information were doubled is inputted into the coordinate input unit 4. [c:\MyDocument\Patent.doc, "10, 12.5", and] [c:\MyDocument\Patent.doc, "10, 11",] [c:\MyDocument\Patent.doc, "10, 10",] In addition, what is necessary is just to insert predetermined separator data, when a point 5 separates from a writing side.

[0117] Since a former document can be identified uniquely and a writing locus can be found in any case, it is easy to add such information to a former document automatically. What is necessary is to read an electronic former document from document information, such as a document name, and just to add the writing locus using coordinate information to the document. The aforementioned coordinate information and document information are acquired from the coordinate input unit 4, and even if it can build easily the system of electronic-filing-document edit which is added to a former document and it uses the so-called well-known word processor software, if the macro function is used, it is easily realizable.

[0118] In addition, it is not necessary to necessarily carry out the aforementioned processing in which the writing locus to a former document is corrected to real time for example, and once stores in the memory in a microcomputer 8, an information processor 9 is connected with a microcomputer 8 later, and it may be made to perform retouch to a former document. At this time, it is desirable that retouch to a former document is not performed suddenly, but it is made to carry out after asking the operator of an information processor 9 for a check. Furthermore, it is desirable for the operator of an information processor 9 to also make selectable the former document which corrects by actuation of an information processor 9, and even when there is no document information which identifies a former document as the code symbol 3 in this case, it is possible to correct by selecting a suitable former document.

[0119] Next, another example is explained about a means to detect the location on the medium 1 of a point 5. Drawing 18 shows the image which read the medium 1 used in this another example with the image reader 6. As shown in drawing 18, by this medium 1, four symbol graphic forms 21 and 21 with this different code symbol 3 and — are arranged, respectively at the rectangular head around the code symbol 3 which is the two dimensional code by which the same coordinate information as what is shown in drawing 16, and document information were encoded.

[0120] As the gestalt 1 of implementation of invention explained, when calculating the deformation amount of the code symbol 3 only using the image of the code symbol 3 of a two dimensional code, the image for a corner of the code symbol 3 is used, but since the code symbol 3 is not originally used for such an application, sufficient precision may not be acquired when there is no dot in a part for the corner of the code symbol 3.

[0121] Then, the symbol graphic forms 21 and 21 for detecting the amount of distortion of this code symbol 3 other than the code symbol 3 and — are arranged like the example of drawing 18. Since the symbol graphic forms 21 and 21 and — do not need to encode and do not need to take out data, its configuration which is easy to detect may be desirable, and although it is square, in the example of drawing 18, a round shape etc. is sufficient as them. And the template-matching technique can be used and the symbol graphic forms 21 and 21 on the screen and the coordinate (henceforth the focus) of — can be detected.

[0122] Moreover, since the symbol graphic forms 21 and 21 and the graphic form of — square otherwise exist on a screen in fact, therefore, which point it does not restrict that they are the extracted symbol graphic forms 21 and 21 and the thing by which — is not necessarily arranged around the target code symbol 3, but the thing of the location distant 1 more block may be detected, and is extracted differ each time. However, since the distance of the image reader 6 and the space of a medium 1 is almost fixed, it becomes almost fixed [the symbol graphic forms 21 and 21 of four angles, and spacing in an image of —]. Therefore, it can judge in which block each focus and the code symbol 3 are, respectively. The code symbol 3, and the symbol graphic forms 21 and 21 and the procedure of searching for the coordinate in the space [as opposed to / since it opts for arrangement beforehand / this] of a medium 1 of — are as follows.

[0123] That is, drawing 19 is a flow chart explaining the processing which searches for the coordinate of the point 5 on the space of a medium 1. As shown in drawing 19, a microcomputer 8 searches for the coordinate on the space of the medium 1 in the core of the code symbol 3 from the encoding result of the code symbol 3 first (step S11). And the coordinate on the space of the medium 1 in each focus is searched for from the coordinate on the space of the medium 1 in the core of the code symbol 3 for which searched for the coordinate on the image in the core of this code symbol 3, and the coordinate on the image of each focus, and it asked at step S1 (step S12). This step S12 has realized the symbol graphic form calculation means. And from the coordinate on the space of each focus for which it asked at step S12, and the coordinate on an image, as it is the above, it asks for a projective-transformation multiplier (step S13). And the coordinate on the space of the medium 1 in a point 5 can be searched for from a point 5, the physical relationship of the image reader 6, and a projective-transformation multiplier (step S14). This step S14 has realized the coordinate detection means.

[0124] Moreover, you may make it be a degree. That is, as shown in drawing 20, two or more at least four code symbols 3 of the two dimensional code by which coordinate information and document information were encoded are read, and the coordinate on the space of the medium 1 in the encoding result and the core of each code symbol 3 is acquired.

[0125] Like the above, since sufficient precision may not be acquired, detection of the angle of the code symbol 3 which is a two dimensional code asks for a projective-transformation multiplier in this example using the main coordinate of four code symbols 3. That is, the procedure of searching for the coordinate in the space of a medium 1 is as follows.

On the other hand, from the core of each of that code symbol 3 from the encoding result of four code symbols 3 first (step S21). And from the coordinate on the space of the medium 1 in the core of each of that code symbol 3 for which searched for the coordinate on the image in the core of four code symbols 3, and it asked at step S21, as it is the above, a projective-transformation multiplier can be found (step S22). This step S22 has realized the code symbol detection means. And the coordinate on the space of the medium 1 in a point 5 can be searched for from a point 5, the physical relationship of the image reader 6, and a projective-transformation multiplier (step S23). This step S23 has realized the coordinate detection means.

[0127] In the example explained with reference to drawing 18 and drawing 19, although the symbol graphic forms 21 and 21 and the coordinate on the space of a medium 1 of — are searched for Although each physical relationship needed to be judged (step S12), in the example explained with reference to drawing 20 and drawing 21 Since the coordinate on the space of the medium 1 is acquired by encoding each code symbol 3, the processing corresponding to step S12 can be omitted, and improvement in the speed of processing can be attained. On the other hand, in the example explained with reference to drawing 20 and drawing 21, it is wide range than the example explained with reference to drawing 18 and drawing 19, and since it is necessary to encode the code symbol 3 of a two dimensional code, that in which optical-system 6b of the image reader 6 can read an image broadly is needed.

The image reader 6 compared with the example explained with reference to drawing 20 and drawing 21.

[0128] In addition, four symbol graphic forms 21 are used in the example explained with reference to drawing 18 and drawing 19. The coordinate of the core of the code symbol 3 can also be substituted for one piece in this, it can ask for a transform coefficient in a higher precision using the least square method using five or more symbol graphic forms 21 conversely, and the coordinate on the medium 1 of a point 5 can also be detected more delicately. It is as the gestalt 1 of implementation of invention having explained the structure of a medium 1, and its ingredient.

[0129]

[Effect of the Invention] Since invention according to claim 1 can detect the coordinate of the locus notes of was taken on the medium, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since the location of the predetermined point on a medium is detected using at least one of the location of a code symbol, the sense, and the amounts of distortion in addition to the information which decoded the code symbol which shows the coordinate on a medium, the coordinate on a medium is delicately detectable.

[0130] Since invention according to claim 2 can detect the coordinate of the locus notes of was taken on the medium, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since the coordinate of two or more symbol graphic forms 21 and the coordinate on the space of the medium 1 in the core of each of that code symbol 3 for which searched for the coordinate on the image in the core of four code symbols 3, and it asked at step S21, as it is the above, a projective-transformation multiplier can be found (step S22). This step S22 has realized the code symbol detection means. And the coordinate on the space of the medium 1 in a point 5 can be searched for from a point 5, the physical relationship of the image reader 6, and a projective-transformation multiplier (step S23). This step S23 has realized the coordinate detection means.

[0131] Since invention according to claim 3 can detect the coordinate of the locus notes of was taken on the medium, it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet. Moreover, since not only the information that decoded only one code symbol which shows the coordinate on a medium but the coordinate in the information which decoded two or more code symbols, and the image of two or more of the code symbols is used and the location of the predetermined point on a medium is detected, the coordinate on a medium is delicately detectable.

[0132] In addition to the effect of the invention of a publication, invention according to claim 4 can record the writing locus according to color on one 1 of claims 1-3.

0133] It becomes possible, without [of invention according to claim 5] relating with real time the information which carried out retouch entry to the information before retouch on a medium in addition to an effect of the invention given in one 1 of claims 1-4 using a tablet.

[0134] In addition to the effect of the invention of a publication, invention according to claim 6 specifies the information before retouch on a medium as one 1 of claims 1-4 easily, and it becomes possible, without [of it] relating with real time the information which carried out retouch entry to the information before the retouch concerned using a tablet.

[0135] In addition to an effect of the invention according to claim 6, invention according to claim 7 specifies the information before retouch on a medium, and becomes possible automatically, without relating with real time the information which carried out retouch entry to the information before the retouch concerned using a tablet.

[0136] Invention according to claim 8 can do so the same effectiveness as invention of a publication to one 1 of claims 1-7.

[0137] Invention according to claim 9 can do so the same effectiveness as invention according to claim 2.

[0138] the effectiveness as invention given in one 1 of claims 1-7 that invention according to claim 10 is the same ~ - in addition, the logical positional information of a document is detected and it becomes possible, without [of relating with real time the information which carried out retouch entry to the information before retouch on a medium] using a tablet.

[0139] Since invention according to claim 11 can write down a medium on one 1 of claims 8-10 possible [rewriting] in addition to the effect of the invention of a publication, it can save a paper resource.

[0140] In addition to an effect of the invention given in one 1 of claims 8-11, since a code symbol is invisible, as for invention according to claim 12, a medium becomes legible.

[0141] Invention according to claim 13 does so the same effectiveness as invention according to claim 2 using a coordinate input unit according to claim 2 etc.

[Translation done.]

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1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. *** shows the word which can not be translated.
3. In the drawings, any words are not translated.

CLAIMS

[Claim(s)]

[Claim 1] The body of equipment with which people can have in a hand and can perform writing actuation, and the image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, Calculation means, such as the amount of distortion which computes at least one of the location of said code symbol in a decoding means to decode this read code symbol, and the image which said image reader read, the sense, and the amounts of distortion, Among the document information which is the information which shows the exception of the coordinate information which shows the coordinate on said medium contained in the information after said decoding, and said medium, at least The former, The coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium, based on at least one of the location of said code symbol, the sense, and the amounts of distortion.

[Claim 2] The body of equipment with which people can have in a hand and can perform writing actuation, and the image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, A decoding means to decode this read code symbol, A symbol graphic form calculation means to compute the coordinate on said medium of two or more symbol graphic forms whose code symbols concerned arranged around said code symbol on said medium which exists in the image read with said image reader are another kind, and said image, The coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium, based on the coordinate information which shows the coordinate of the symbol graphic form computed with this symbol graphic form calculation means, and the coordinate on said medium contained in the information after said decoding.

[Claim 3] The body of equipment with which people can have in a hand and can perform writing actuation, and the image reader which reads optically the code symbol which was prepared in this body of equipment and formed on the medium, A code symbol detection means to detect the coordinate in the image concerned of two or more of said code symbols contained in a decoding means to decode this read code symbol, and the image read with said image reader, It is based on the coordinate information which shows the coordinate on said medium contained in the information after said decoding about the coordinate in the image of two or more of these code symbols, and two or more code symbols concerned, A coordinate input unit equipped with a coordinate detection means to detect the location of the predetermined point on said medium.

[Claim 4] A coordinate input unit given in one 1 of claims 1-3 equipped with a data-processing means to associate and process the color information which is the information about the color of the contents which corrected with the writing implement and this writing implement for being prepared in the point of said body of equipment, and correcting on said medium, and said coordinate information.

[Claim 5] A coordinate input unit given in one 1 of claims 1-4 equipped with the 1st storage means which memorizes the predetermined data currently beforehand printed on said medium, and an addition means to add said coordinate information acquired about said specific medium, and said color information to said predetermined data memorized by said 1st storage means.

[Claim 6] When printing predetermined data on said medium by the printer and this printer A correlation processing means to associate and process said document information acquired from said medium, and the identification information which is the information which identifies said predetermined data, A coordinate input unit given in one 1 of claims 1-4 equipped with the 1st storage means which memorizes said predetermined data, and the 2nd storage means which memorizes said information by which correlation processing was carried out.

[Claim 7] When said document information, said coordinate information, and said color information are acquired about said specific medium Said predetermined data memorized by said 2nd storage means by collating the acquired document information and the information memorized by said 2nd storage means are specified, A coordinate input unit [equipped with an addition means to add the coordinate information and color information that said acquisition was made to said the specified predetermined data] according to claim 6.

[Claim 8] It is the information processing system with which it has a coordinate input device given in one 1 of claims 1-7, and the medium by which the code symbol was formed on the front face, and said code symbol encodes the former at least among the document information which shows the exception of the coordinate information which shows the coordinate on said medium, and said medium.

[Claim 9] A coordinate input device according to claim 2 and the code symbol concerned arranged around a code symbol and the code symbol concerned on the front face are information processing system with which it has the medium by which two or more symbol graphic forms which are another kind were formed, and said code symbol

information which shows the coordinate on said medium, and said medium.

[Claim 10] It is the information processing system which encodes the former at least among the document information which shows the exception of the coordinate information which is the logical positional information of the document [have a coordinate input device given in one 1 of claims 1-7, and the medium by which the code symbol was formed on the front face, and / symbol / said / code] on said medium, and said medium.

[Claim 11] Said medium is information processing system given in one 1 of claims 8-10 which form the code symbol layer in which said code symbol was formed on the base material, and the recording layer notes of can be taken possible [rewriting].

[Claim 12] Said code symbol is information processing system given in one 1 of claims 8-11 which are invisible.

[Claim 13] The code symbol concerned arranged around a code symbol and the code symbol concerned at the front-face top is a medium by which two or more symbol graphic forms which are another kind are formed, and said code symbol encodes the former at least among the document information which shows the exception of the coordinate information which shows the coordinate on said medium, and said medium.

[Translation done.]

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2. **** shows the word which can not be translated.
3. In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]

[Drawing 1] It is the top view of the medium of the information processing system which is the gestalt 1 of implementation of this invention.

[Drawing 2] It is the block diagram of the coordinate input device of the pen mold of said information processing system.

[Drawing 3] It is the top view showing the example of an image when reading a medium with said coordinate input unit.

[Drawing 4] It is the top view of the code symbol formed on said medium.

[Drawing 5] It is the top view showing the example of an image when reading a medium with said coordinate input unit.

[Drawing 6] It is an explanatory view explaining detection of the location of said code symbol.

[Drawing 7] It is the top view showing the example of an image when reading a medium with said coordinate input unit.

[Drawing 8] It is an explanatory view explaining detection of the location of said code symbol.

[Drawing 9] It is an explanatory view explaining detection of the inclination of said code symbol, or the amount of distortion.

[Drawing 10] It is drawing of longitudinal section of said medium.

[Drawing 11] It is drawing of longitudinal section of said medium.

[Drawing 12] The reversibility recording layer using a leuco color and a developer is a graph explaining the process colored and decolorized.

[Drawing 13] The reversibility recording layer which consists of an organic low-molecular one and resin is a graph explaining transparence and the process which becomes cloudy.

[Drawing 14] It is the top view of the medium of the information processing system which is the gestalt 2 of implementation of this invention.

[Drawing 15] It is a perspective view in the condition of having the body of equipment of the coordinate input unit of said information processing system in a hand, and writing down on the medium.

[Drawing 16] It is the top view showing the example of an image which read the medium of drawing 14 with said coordinate input unit.

[Drawing 17] It is a flow chart explaining the processing in the case of searching for the coordinate on the space of the medium corresponding to the location of the point of said body of equipment from the data which encoded the reading image of the code symbol on said medium.

[Drawing 18] It is the top view showing the example of an image which read the medium with said coordinate input unit.

[Drawing 19] It is a flow chart explaining the processing in the case of searching for the coordinate on the space of the medium corresponding to the location of the point of said body of equipment from the data which encoded the reading image of the code symbol on said medium.

[Drawing 20] It is the top view showing the example of an image which read the medium with said coordinate input unit.

[Drawing 21] It is a flow chart explaining the processing in the case of searching for the coordinate on the space of the medium corresponding to the location of the point of said body of equipment from the data which encoded the reading image of the code symbol on said medium.

[Description of Notations]

1 Medium

3 Code Symbol

4 Coordinate Input Unit

5 Point

6 Image Reader

7 Body of Equipment

13 Base Material

14 Code Symbol Layer

15 Recording Layer

21 Symbol Graphic Form

[Translation done.]